



## The Cossidae (Lepidoptera) of Mongolia

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**Abstract:** An annotated list of the Cossidae of Mongolia includes two subfamilies, 12 genera, and 23 species.

**Key words:** species list, endemism, Palaearctic, Eurasia

### INTRODUCTION

The Cossidae (Insecta, Lepidoptera), known as Carpenter and Leopard moths, are geographically widespread including approximately 1,000 species, 350 of which have been recorded from the Palearctic (Yakovlev 2011; Nieuwerken et al. 2011).

The taxonomic knowledge of the Cossidae (Lepidoptera) of Mongolia was initiated with the collection of material during the expeditions of the well-known Hungarian entomologist Zoltan Kaszab (Daniel 1965, 1969, 1970, 1973). In 2004, I published a synopsis of the Cossidae of Mongolia. Data on systematics and distribution of the Cossidae were summarized, treating fifteen species, including several new species, based mostly on material in the Thomas Witt Collection and material collected by myself in the Altai Mountains and southwestern (Dzungarian Gobi) Mongolia (1999, 2002–2009). Finally, Yakovlev and Doroshkin (2004), Yakovlev (2006, 2007a, 2007b, 2009, 2011, 2012) described additional new species and provided distributional data on other species of Cossidae from Mongolia.

Additional collections of Cossidae during expeditions from 2010–2012 have added numerous new records requiring an update of the Cossidae of Mongolia.

### MATERIALS AND METHODS

Adult moths were collected at night using ultraviolet lights. Male and female genitalia dissections were mounted in euparal on microscope slides. Taxonomic nomenclature used in this checklist follow Yakovlev (2011).

The abbreviations of collections, institutions, and museums include: ASL, collection of A. Saldaitis (Lithuania); LSL, Linnean Society (London, G.B.);

MHUB, Museum für Naturkunde der Humboldt-Universität (Berlin, Germany); MNHB, Museum of Natural History, Budapest; MWM, Museum of Thomas Witt (Munich, Germany); RYB, collection of R. Yakovlev (Barnaul, Russia); ZISP, Zoological Institute of Science Academy of Russian Federation (Saint-Petersburg, Russia).

### RESULTS

#### Annotated list of species

Family Cossidae Leach, [1815]

Subfamily Catoptinae Yakovlev, 2009

Genus *Catopta* Staudinger, 1899

*Dtsch. Entomol. Ztschr. Iris* 12: 157–159. Type species: *Catopta albi-macula* Staudinger, 1899.

1. ***Catopta albonubila*** (Graeser, 1888) (Figure 1)

*Cossus albonubilus* Graeser, 1888, *Berl. Entomol. Ztschr.* 32: 119.

Type locality: Vlad. [Vladivostok, Primorskii Krai, southeast Russia].

Type material (holotype by monotypy) in ZISP.

General distribution: Russia (Chita, Primorje, Yakutia), central Mongolia, northeastern China, Korea.

Distribution in Mongolia: Central, Suhebaator and Khentei Aimaks. In Mongolia, ssp. *argunica* Yakovlev, 2007 (type locality: east Transbaicalia, Kuenga, 45 km SW of Sretensk [Russia, south part of Chita Region]; type material: holotype by original designation in MWM).

Material examined: 1 male, Mongolia, Suhebaator Aimak, 25 km N of Bajanterem, 950 m above sea level (a.s.l.), 1.08.1965 (MWM); 2 males, Aimak Henti, Tsenher Mandal Modoto, 47°50' N, 109°05' E, 12.7.1984, 1,700 m a.s.l., leg. Z. Weidenhoffer (MWM); 4 males, Chentai Aimak, Tsenkermandal, Modoto, 1,600–1,800 m a.s.l., 47°48' N, 109°04' E, 14.4.1984, leg. Cerny (MWM); 1 male, Central Aimak, Tuul Valley, Nalaikha, 1,600–1,800 m a.s.l., 6–8.7.1984, leg. Cornj (MWM); 1 male, Central Aimak, Bogdo ul Mountains, Zaisan Ulan Bator, 1,400–1,600 m a.s.l., 47°52' N, 106°55' E, 22.7.84, leg. Cerny (MWM).

**2. *Catopta perunovi* Yakovlev, 2007 (Figure 2)***Eversmannia* 9: 13–14, pl. 2: 5–9, figs. 3–6, map 2.

Type locality: W. Altai Mountains, Ongudai [Russia, Altai Rep., Ongudai].

Type material (holotype by original designation) in MWM.

General distribution: Altai-Sayan Mountains, northwest Mongolia (Bayan-Ulgii, Uvs, Khovsgol district), Central Yakutia (Elanskoe, 60 km southwest of Pokrovsk).

Distribution in Mongolia: Khovd, Khubsugul and Bayan-Ulegei Aimaks.

Material examined: 1 male, Mongolia, Chovsgol Aimak, 4 km NW von der Stadt Moron, 1,500 m a.s.l., 19.07.1968, exp. Dr. Kaszab (MWM); 1 male, Mongolia, Chovsgol Aimak, 8 km N of somon Buren-Chaan, Delger Moron, 1,450 m a.s.l., 16.07.1968, exp. Dr. Kaszab (MWM), 4 males, W. Mongolia, Bayan-Ulegei Aimak, Kobdo-gol Valley, 20 km SW of Tsengel, 1,800 m, 26–30.07.2009, leg. E. Guskova and R.V. Yakovlev (RYB).

**3. *Catopta saldaitisi* Yakovlev, 2007 (Figure 3)***Eversmannia* 9: 15–16, pl. 2: 10–11, figs. 7–8, map 3.

Type locality: Omnogovi Aimak, Govi Altai Mountains, Gurvan-Sayhan, Valley Yulin [southern Mongolia].

Type material (holotype by original designation) in MWM.

General distribution: Gobi Altai (Gurvan-Saihan) Mountains and southern part of Mongolian Altai (southern Mongolia: South-Gobi, Gobi-Altai and Hovd Aimaks).

Material examined: holotype, male, Omnogovi Aimak, Govi Altay Mountains, Gurvan Sayhan, Valley Yulin, 2,050 m, 43°27' N, 104°03' E, 25–28.07.1988, leg. G. Szabwky (MWM); paratypes: 1 male, Daladzadgat, 11.7.81, leg. A. Weiss (MWM); 35 males, 2 females, Omnogovi Aimak, Govi Altay Mountains, Gurvan Sayhan, Valley Yulin, 2,050 m a.s.l., 43°27' N, 104°03' E, 25–28.07.1988, leg. G. Szabwky (MWM); 1 male, 1 female, S. Mongolia, Omnegov Aimak, Gurvan-Saikhan Mountains, 12 km NW of Tzokhor village, 2,300 m a.s.l., 14–15.07.2002, leg. S. Churkin (RYB); 2 male, 2 females, Mongolia, Gobi Altay Aimak, S. of Mongolian Altay, Alag Kharkhan Mountains, 2,500 m a.s.l., 5–7.07.2004, leg. Saldaitis, 45°31' N, 94°04' E; 6 males, 1 female, Mongolia, Gobi Altay Aimak, Han Tayshir Mountains, Jargalan somon env., 2,050 m a.s.l., 12–14.07.2004, leg. Saldaitis, 46°50' N, 095°54' E (ASL); 1 male, Mongolia, Hovd Aimak, Sutay Uul Mountains, NW slopes, 1,900 m., 10.07.2004. leg. Saldaitis, 46°47' N, 093°23' N (ASL); 1 male, Mongolia, Hovd Aimak, Sutay Uul Mountains, NW slopes 2,000 m a.s.l., 11.07.2004, leg. Saldaitis, 46°49' N, 093°18' E (ASL); 1 male, Mongolia, Gobi Altay Aimak, S of Mongolian Altay, Mogoin gol River, 1,920 m a.s.l., 8–9.07.2004. leg. Saldaitis, 45°39' N, 093°47' E (ASL); 1 male, SW Mongolia, Gobi-Altai Aimak, Mongolian Altai Mountains, S. slope, Mogoiijn-Gol Valley, 11.07.2009, 1,800 m a.s.l., leg. R. Yakovlev and E. Guskova (RYB).

**Genus *Gobibatyr* Yakovlev, 2004**

*Euroasian Entomol. J.* 3(3): 217–218. Type species: *Cossus colossus* Staudinger, 1887.

**4. *Gobibatyr colossus* (Staudinger, 1887) (Figure 4)**

*Cossus colossus* Staudinger, 1887, *Stettin. ent. Ztschr.* 48: 86.

Type locality: Kuldja-District [northwest China, Xinjiang, Kuldzha].

Type material (holotype by monotypy) in MHUB.

General distribution: Southeastern Kazakhstan, Kyrgyzstan, western Mongolia (Khovd Aimak, Arshantyn-Nuruu Mountains), northwestern China.

Material examined: 1 female, Khovd Aimak, Arshantyn-Nuruu Mountains, middle stream of Ulyastain Sala river, 2,100 m, 23.06.2004, leg. D. Djachenko (RYB).

**5. *Gobibatyr ustyuzhanini* Yakovlev, 2004 (Figure 5)**

*Euroasian Entomol. J.* 3(3): 218–219.

Type locality: Southern Mongolia, Gobi-Altai Aimak, 30 km N of Biger.

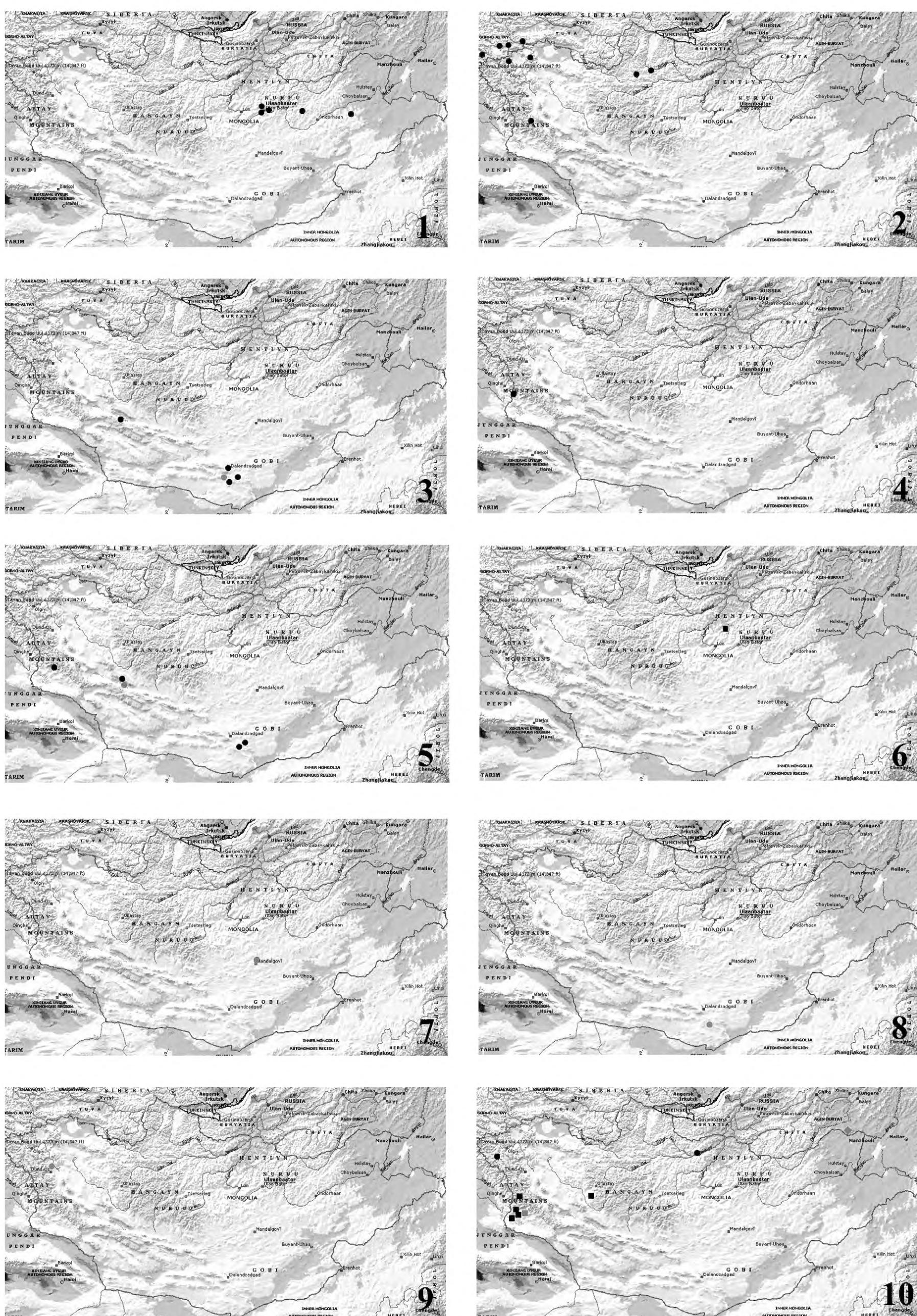
Type material (holotype by original designation) in ZISP.

General distribution: Mongolia (South-Gobi, Khovd and Gobi-Altai aimakAimaks).

Material examined: Holotype. Male. Southwestern Mongolia, Gobi-Altai Aimak, 30 km N of Biger, desert, 1,100 m a.s.l., 27.06.1999, leg. Yakovlev R.V. (ZISP). Paratypes: 3 males, the same data, leg. V. Kovtunovitch, P. Ustyuzhanin and R. Yakovlev (RYB); 1 male, Southern Gobi Aimak, 70 km SW of Khan-Bogdo Somon, 18.06.1971, leg. Kerzhner (ZISP); 1 male, Southern Gobi Aimak, 50 km SSE of Noen, 1973, leg. G. Medvedev (ZISP); 1 male, Southern Gobi Aimak, Bulgan Somon, Talyn Bulay, 1,350 m a.s.l., 5.07.1967., exp. Z. Kaszab" (MWM); 4 males, 1 female, Chovd Aimak, Janatin Dolon, 40 km N Somon Manchan, SW bank of Char us nuur lake, 1,200 m a.s.l., 9.7.66., Z. Kaszab (MWM); 1 male, Chovd Aimak, 10 km SSW Somon Bulgan, 1,200 m a.s.l., 5.7.66., Z. Kaszab (MWM); 1 male, Gobi-Altai Aimak, between Beger nuur and somon Beger, 1,400 m a.s.l., 25.6.66., Z. Kaszab (MWM); 1 male, Gobi Altai Aimak, Baga nuur urd els, SE bank of Doroo nuur lake, 1,200 m a.s.l., 12.7.66. Z. Kaszab (MWM); 1 male, Gobi-Altai Aimak, Zachuj Gobi, 10 km N of Chatan chajrchan mountain, 1,750 m a.s.l., 27.06.66., Z. Kaszab (MWM). No type material: 4 males, 1 female, southwestern Mongolia, Hovd Aimak, Bodonchijn-Gol basin, Hundijn-Gol river valley, 1,600 m a.s.l., 6.07.2009, leg. R. Yakovlev and E. Guskova (RYB); 1 male, southwestern Mongolia, Gobi-Altai Aimak, Mongolian Altai Mountains, S slope, Mogoiijn-Gol Valley, 11.07.2009, 1,800 m a.s.l., leg. R. Yakovlev and E. Guskova (RYB).

**Genus *Acossus* Dyar, 1905**

*Proc. U.S. Nat. Mus.* 29: 178. Type species: *Cossus undosus* Lintner, 1878.



**Figures 1–10.** Distribution of Cossidae in Mongolia. **1:** *Catopta albonubila* (Graeser, 1888). **2:** *Catopta perunovi* Yakovlev, 2007. **3:** *Catopta saldaitisi* Yakovlev, 2007. **4:** *Gobibatyr colossus* (Staudinger, 1887). **5:** *Gobibatyr ustuzhanini* Yakovlev, 2004. **6:** *Acossus viktor* (Yakovlev, 2004). **7:** *Chingizid gobiana* (Daniel, 1970). **8:** *Chingizid transaltaica* (Daniel, 1970). **9:** *Chingizid kosachevi* Yakovlev, 2012. **10:** *Cossus cossus* (Linnaeus, 1758); circles (●): ssp. *cossus* (Linnaeus, 1758); squares (■): ssp. *deserta* Daniel, 1969; diamonds (◆): ssp. *daurica* Yakovlev, 2007. Red marks = type locality.

***Acossus viktor* (Yakovlev, 2004) (Figure 6)***Lamellocossus viktor* Yakovlev, 2004, *Euroasian Entomol. J.* 3(2): 157.

Type locality: Tuva, 30 km SW of Samagaltau village, the Tes-Khem River valley [Russia, southern Siberia].

Type material (holotype by original designation) in ZISP.

General distribution: Russia, Southern Tuva (Erzin distr.). Probably in the Ubs Aimak of Mongolia.

Genus *Chingizid* Yakovlev, 2011*Neue Ent. Nachr.* 66: 17. Type species: *Lamellocossus transaltaica* Daniel, 1970.6. ***Chingizid gobiana* (Daniel, 1970) (Figure 7)***Lamellocossus gobiana* Daniel, 1970, *Reichenbachia* 13(19): 199–202.

Type locality: Mittelgobi Aimak, 20 km S of Somon Delgerzogt, [southern Mongolia].

Type material: holotype (by original designation) in MBNH.

General distribution: Mongolia (Middle-Gobi Aimak).

Material examined: holotype (male) and paratype (female) (NHMB, MWM).

7. ***Chingizid transaltaica* (Daniel, 1970) (Figure 8)***Lamellocossus transaltaica* Daniel, 1970, *Reichenbachia* 13(19): 203.

Type locality: Sudgobi Aimak, Gurban Sajchan ul Gebirge, zwischen Somon Churmen und Somon Bajandalaj, 24 km W von Churman, [southern Mongolia]

Type material: holotype (by original designation) in MBNH.

Distribution: Southern Mongolia

Distribution: South-Gobi Aimak (Transaltaian Gobi).

Material examined: holotype (male) and paratypes (2 females) (NHMB, MWM).

8. ***Chingizid kosachevi* Yakovlev, 2012 (Figure 9)***Euroasian Ent. J.* 11(6): 515.

Type locality: W. Mongolia, Hovd Aimak, near Erdene-Buren-Somon, Shurag-Gol Valley.

Type material (holotype by original designation) in ZISP.

General distribution: W. Mongolia (Great Lakes Valley).

Material examined: Holotype: male, W. Mongolia, Hovd Aimak, near Erdene-Buren-Somon, Shurag-Gol Valley, 1,400 m a.s.l., 13.06.2011, leg. R. Yakovlev (ZISP). Paratypes: 3 females, with the same data as holotype (RYB).

Genus *Cossus* Fabricius, 1793*Entomol. System.* 3(2): 3. Type species: *Phalaena cossus* Linnaeus, 1758.9. ***Cossus cossus* (Linnaeus, 1758) (Figure 10)***Phalaena-Bombyx cossus* Linnaeus, 1758, *Systema Naturae*: 504.

Type locality: Sweden.

Type material (syntypes) in LSL.

In Mongolia, two subspecies: *Cossus cossus cossus* (Linnaeus, 1758) and *Cossus cossus deserta* Daniel, 1969.

General distribution: all of the Palaearctic Region.

Distribution in Mongolia: ssp. *cossus* (L.) from northern part of Bayan-Ulegei Aimak (Kobdo-Gol Valley) to Selenge Aimak; ssp. *deserta* Daniel, 1969, from Khovd, Dzabkhan Aimaks. Probably in the eastern part of Mongolia: ssp. *daurica* Yakovlev, 2007.

Material examined: holotype of ssp. *deserta* (male) 10 km SSW of somon Bulgan, 1,200 m a.s.l., 4.7.1966, allotype and paratypes (2 males); paratypes (10 males) Somon Uench, Uench gol Valley, 2 km N of village, 1,450 m a.s.l., 7.7.1961 (MWM); 1 male, western Mongolia, Hovd Aimak, Dzhungarian Gobi, 15 km SW of Bulgan, 1,650 m a.s.l., 7.07.2003, R.V. Yakovlev (RYB); 3 males, 1 female, W. Mongolia, Hovd Aimak, near Erdene-Buren-Somon, 1,400 m a.s.l., 4.07.2009, leg. R. Yakovlev and E. Guskova (RYB); 10 males, SW Mongolia, Hovd Aimak, Bodonchijn-Gol basin, Hundijn-Gol river Valley, 1,600 m a.s.l., 6.07.2009, leg. R. Yakovlev and E. Guskova (RYB). Subspecies *cossus* (L.): 3 males, W. Mongolia, Bayan-Ulegei Aimak, Kobdo-gol Valley, 20 km SW of Tsengel, 1,800 m a.s.l., 26–30.07.2009, leg. E.V. Guskova and R.V. Yakovlev (RYB).

10. ***Cossus kerzhneri* Yakovlev, 2011 (Figure 11)***Neue Entomol. Nachr.* 66: 23.

Type locality: Mongolia, East-Gobi Aimak, 25 km SSW of Khuvsgel.

Type material (holotype) in ZISP.

General distribution: Mongolia (East-Gobi Aimak).

Material examined: holotype only.

***Cossus shmakovi* Yakovlev, 2004 (Figure 12)***Euroasian Ent. J.* 3(2): 157.

Type locality: Tuva, 30 km SW of Samagaltau village, the Tes-Khem River valley.

Type material (holotype) in ZISP.

General distribution: Russia, southern Tuva (Erzin district); probably in Ubs Aimak of Mongolia.

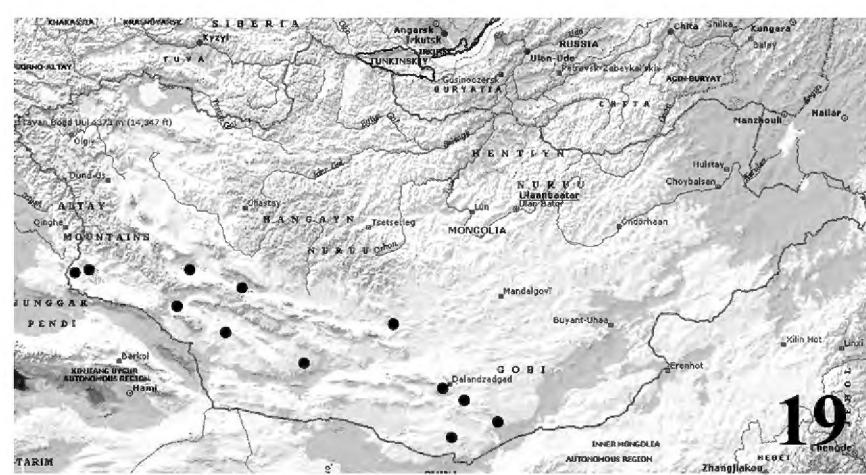
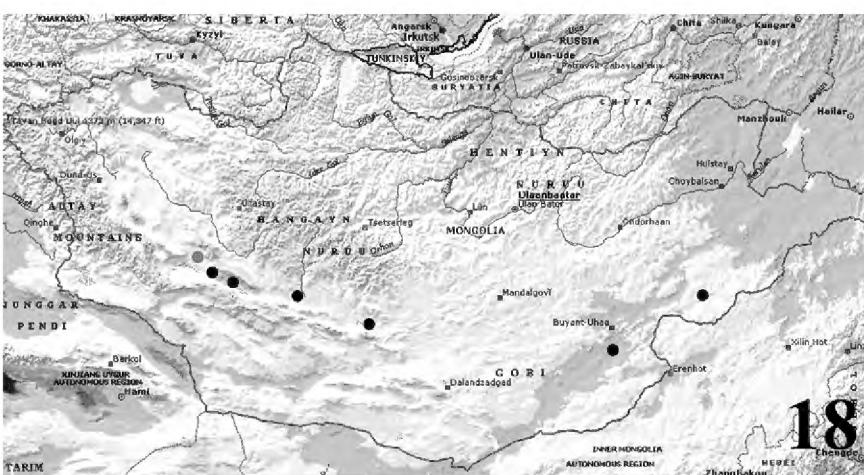
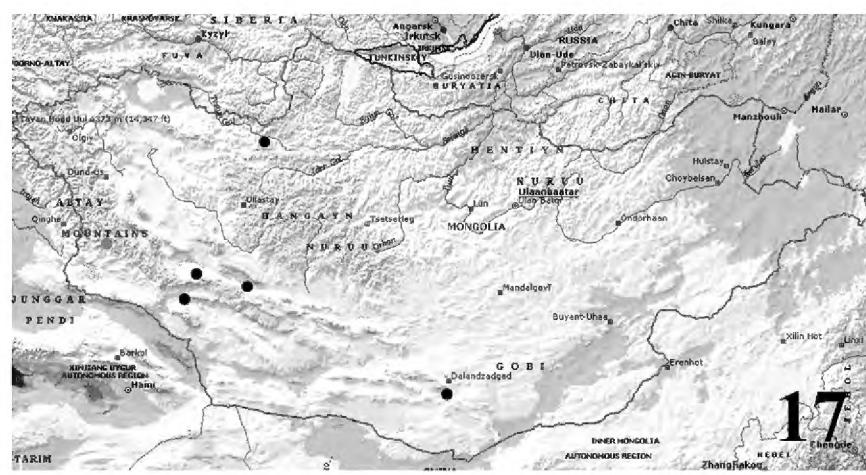
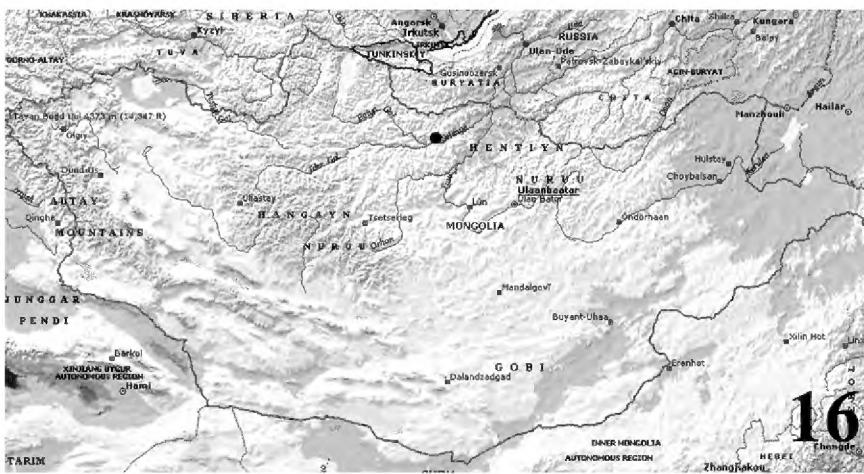
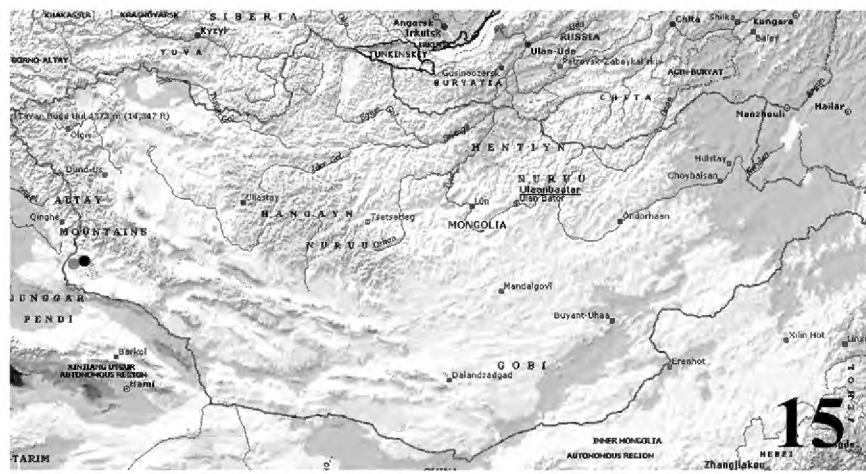
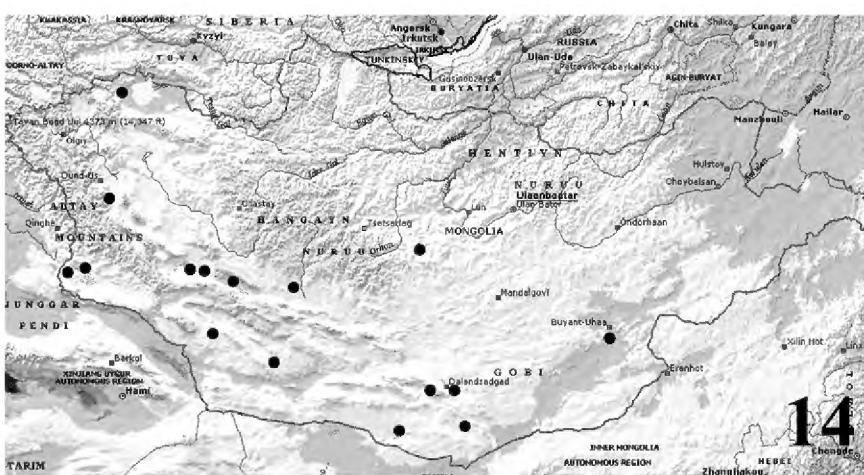
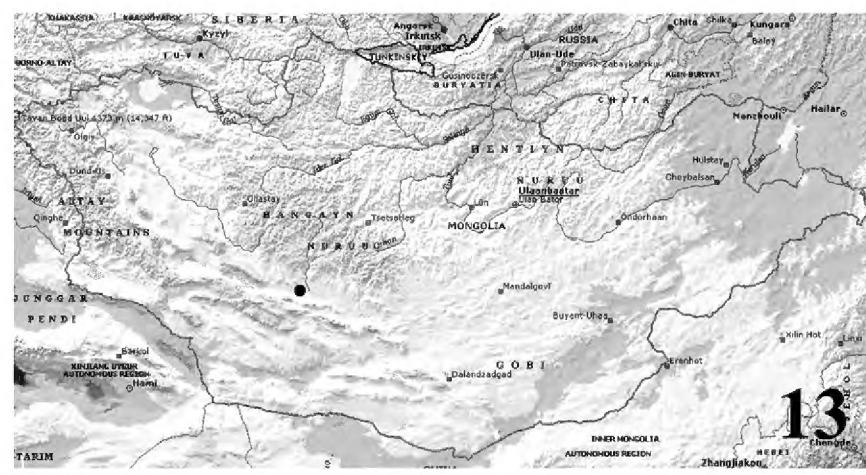
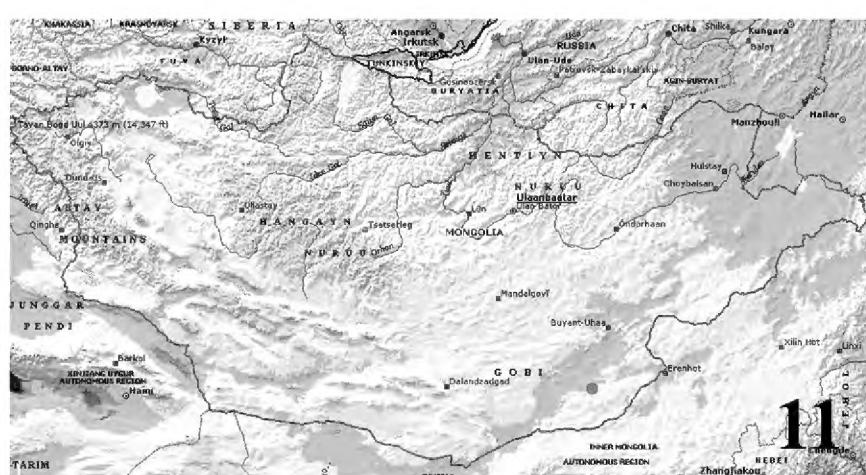
Genus *Holcocerus* Staudinger, 1884*Memoires sur les Lepidopteres* 1: 139. Type species: *Cossus* (*Holcocerus*) *nobilis* Staudinger, 188411. ***Holcocerus holosericeus* Staudinger, 1884 (Figure 13)***Cossus* (*Holcocerus*) *holosericeus* Staudinger, 1884, Rom. Mém. Lép. 1: 141.

Type locality: Askhabad [Ashkhabad, Turkmenistan].

Type material (lectotype) in MHUB.

General distribution: Kazakhstan, southern Mongolia (Bayan-Khongor Aimak, Orog-Nuur Lake), Kirgizia, Uzbekistan, Tadzhikistan, Turkmenia, northwestern China, Afghanistan, Iran.

Material examined: 1 male, valley of lake Orok-Nor, and N slope of Ikhe-Bogdo, 7–13.7.926, leg. P. Kozlov (ZISP).



**Figures 11–20.** Distribution of Cossidae in Mongolia. **11:** *Cossus kerzhneri* Yakovlev, 2011. **12:** *Cossus shmakovi* Yakovlev, 2004. **13:** *Holcocerus holosericeus* Staudinger, 1884. **14:** *Deserticossus consobrinus* Püngeler, 1898. **15:** *Deserticossus beketi* (Yakovlev, 2004). **16:** *Deserticossus tsingtauana* (Bang-Haas, 1912). **17:** *Deserticossus churkini* Yakovlev, 2006. **18:** *Deserticossus mongoliana* (Daniel, 1969). **19:** *Barchaniella inspersa* (Christoph, 1887). **20:** *Eogystia sibirica* (Alpheraky, 1895). Red marks = type locality.

Genus *Deserticossus* Yakovlev, 2006

*Eversmannia* Suppl. 1: 32. Type species: *Cossus arenicola* Staudinger, 1897.

12. ***Deserticossus consobrinus*** Püngeler, 1898 (Figure 14)

*Holocerus consobrinus* Püngeler, 1898, *Soc. Entomol.* 13: 57.

Type locality: Ili gebiet [Ili Valley, southeast Kazakhstan or northwest China].

Type material (holotype by original designation) in MHUB.

General distribution. Southern Siberia (Selenga Valley), Mongolia (Khovd, Gobi-Altai, Bayan-Khongor, Ubs, South-Gobi, East-Gobi Aimaks), Kazakhstan (including South Altai), Kirgizia, China (Xingjiang, Qinghai).

Material examined: 2 males, Gobi Altai Aimak, between Beger nuur lake and somon Beger, 1,400 m a.s.l., 25.6.66. (MWM); Mongol Els desert, 10 km SE of Chechmort, 1,600 m a.s.l., 13.7.66; 1 male, Chovd Aimak, Jamatin Dolon, 40 km N of Somon Manchan, SW bank of Char us nur lake, 1,200 m a.s.l., 11.7.66 (MWM); 2 males, Sudgobi Aimak, Ostrand vom Zölöön ul Gebirge, 58 km WSW of Somon Bajandalaj, 1,500 m a.s.l., 16.6.67 (MWM); 1 male, Nojon Nuruu Range, Ovot Chuural, 1,500 m a.s.l., 20.6.67 (MWM); 1 male, somon Bulgan, Quelle talyn Bulag, 1350 m a.s.l., 5.7.67 (MWM); 1 male, 10 km NNE of Dalanzadgad, 1,450 m a.s.l., 7.7.67 (MWM); 2 males, Bajanchongor Aimak, Caganbulag in Cagan Bogd ul, 1,550 m a.s.l., 24.6.67 (MWM); 1 male, Uvs Aimak, Valley Chondlon gol, 32 km NW of Ulangoom, 1,200 m a.s.l., 8.7.1968 (MWM); 3 males, 2 females, Bajan Hongor, Orog Lake env., 23-24.6.2003, 1230 m a.s.l., 45°05' N, 100°34' E, leg. A. Saldaitis (MWM); 1 male, Bajanchongor Aimak, 60 km S of Bajanchongor, 27-30.06.03, 1,640 m a.s.l., 45°40' N, 100°41' E, leg. A. Saldaitis" (MWM); 14 males, 1 female, Gobi Altai Aimak, 30 km N of Biger, desert, 23-27.06.1999, leg. V. Kovtunovitch, P. Ustyuzhanin and R. Yakovlev (RYB); 3 males, 1 female, Hovd Aimak, Dzhungarian Gobi, 45 km SW of Bulgan, Uvhod-Ula Mt., 1,350 m a.s.l., 8-10.07.2003, leg. V. Doroshkin, P. Ustyuzhanin, D. German and R. Yakovlev (RYB); 4 males, southwestern Mongolia, Gobi-Altai Aimak, Dzhungarian Gobi, Alag-Nuur lake, 16.07.2009, 1300 m a.s.l., leg. R. Yakovlev and E. Guskova (RYB); 1 male, Hovd Aimak, Dzhungarian Gobi, 15 km SW of Bulgan, 1,650 m a.s.l., 10.07.2003, leg. V. Doroshkin, P. Ustyuzhanin, D. German and R. Yakovlev (RYB); 1 female, Govi Altai Aimak, Zakhuiin Gov', Khatan Khairhan Uul, 1,150 m a.s.l., 26.6.03, leg. S. Churkin (RYB); 3 males, 1 female, western Mongolia, Hovd Aimak, near Erdene-Buren-Somon, 1,400 m a.s.l., 4.07.2009, leg. R. Yakovlev and E. Guskova (RYB); 4 males, 1 female, southwestern Mongolia, Hovd Aimak, Bodonchijn-Gol basin, Hundijn-Gol riv. valley, 1,600 m a.s.l., 6.07. 2009, leg. R. Yakovlev and E. Guskova (RYB); 3 males, 2 females, Bajan Horog, Orog Lake env., 23-24.6.2003, 1,230 m a.s.l., 45°05' N, 100°34' E, leg. A. Saldaitis (MWM); 1 male, Bajanchongor Aimak, 60 km S of Bajanchongor, 27-30.06.03, 1,640 m a.s.l., 45°40' N, 100°41' E, leg. A. Saldaitis (MWM); 3 males, Bayankhongor, Ich-Bogd Mountains, 44°59' N, 101°39' E, 5.07.2000, leg. K. Špatenka (coll. W. Speidel, Bonn); 2 males, Gov'-Altaj, Sharga, Bayan-Gol, 46°15' N, 095°19' E, 17.07.2002, leg. K. Špatenka and Z. Weidenhoffer (coll. W. Speidel, Bonn).

leg. A. Saldaitis (MWM); 1 male, Bajanchongor Aimak, 60 km S of Bajanchongor, 27-30.06.03, 1,640 m a.s.l., 45°40' N, 100°41' E, leg. A. Saldaitis (MWM); 3 males, Bayankhongor, Ich-Bogd Mountains, 44°59' N, 101°39' E, 5.07.2000, leg. K. Špatenka (coll. W. Speidel, Bonn); 2 males, Gov'-Altaj, Sharga, Bayan-Gol, 46°15' N, 095°19' E, 17.07.2002, leg. K. Špatenka and Z. Weidenhoffer (coll. W. Speidel, Bonn).

13. ***Deserticossus beketi*** (Yakovlev, 2004) (Figure 15)

*Holocerus beketi* Yakovlev, 2004, *Euroasian Ent. J.* 3 (3): 221.

Type locality: Western Mongolia, Khovd Aimak, Dzhungarian Gobi, 45 km S of Bulgan-somon, Uvhod-Ula Mountain.

Type material (holotype by original designation) in ZISP.

General distribution: Mongolia, Khovd Aimak, Dzhungarian Gobi desert.

Material examined: only type series (holotype (male) and paratypes (7 males)).

14. ***Deserticossus tsingtauana*** (Bang-Haas, 1912)

(Figure 16)

*Holocerus tsingtauana* Bang-Haas, 1912, *D. ent. Z. Iris* 26: 109.

Type locality: Tsingtau [China, Shandong province, Tsingtau Mountains].

Type material (syntypes) in MHUB and MWM.

General distribution: Russia (Primorskii Krai, Chita region, Buryatia Republic), Mongolia (Central Aimak), China (Heilongjiang, Jilin, Liaoning, Hebei, Shandong, Jiangsu, Shanxi, Shaanxi, Ningxia, Gansu, Inner Mongolia, Beijing, Tianjin, Shanghai, Anhui, Yunnan), Korea.

Material examined: 1 male, Mongolia, Central Aimak, 25 km W of Erdennesant, 14-15.06.2003, 47°22' N, 104°13' E, 1,260 m a.s.l., leg. A. Saldaitis (MWM).

15. ***Deserticossus churkini*** Yakovlev, 2006 (Figure 17)

*Eversmannia* Supplement 1: 58-59.

Type locality: W. Mongolia, Hovd Aimak, middle stream of Uenchin-Gol river.

Type material (holotype by original designation) in MWM.

Distribution: Mongolia (Khovd, Bayan-Khongor, Ubs and South-Gobi Aimaks).

Material examined: holotype (male), W. Mongolia, Hovd Aimak, middle stream of Uenchin-Gol River, 1,750 m a.s.l., 2.07.2004, leg. R. Yakovlev and D. Ryzhkov (MWM), paratypes: 6 males, 2 females, Bayan-Khongor Aimak, 140 km S of Shine-Dzhinst, oasis Ekhin-Gol, 12-16.07.1981. leg. A. Lvovskii (ZISP), 1 male, South-Gobi Aimak, Dzemgin-Gobi, 25 km SSW of Khajlastyn-Khuduk, 20.06.971, leg. I. M. Kerzhner (ZISP), 1 male, Northern Gobi, Kholt, 10.08.1926, leg. P. Kozlov (ZISP); 1 female, Mongolia, Gobi-Altai Aimak, 30 km SE of Bugat, 2,030 m a.s.l., 10.06.2003, leg. A. Saldaitis (MWM).

16. **Deserticossus mongoliana** (Daniel, 1969) (Figure 18)  
*Holocerus mongoliana* Daniel, 1969a, Reichenbachia 11: 274–275.

Type locality: Mongolia, Gobi-Altai Aimak, Mongol Els, 10 km SE of Chechmort.

Type material (holotype by original designation) in MNHB.

Distribution: Mongolia (Gobi-Altai, Bayan-Khongor, Ubs, South-Gobi, Sukhebaator, Uburkhangai and East-Gobi Aimaks).

Material examined: holotype (male) Gobi Altai Aimak, Mongol Els, 10 km SE Chechmort, 1600 m a.s.l., 13.7.66 (MNHB); paratypes: 1 male, Gobi Altai Aimak, Baga nuuryn nurd els, SE bank of Doroo nuur lake, 1,200 m a.s.l., 12.7.66 (MWM); 1 male, 2 females, East-Gobi Aimak, Cagan Elis, 30 km ESE of Zuun-Bajan, 800 m a.s.l., 22.6.63 (MWM); 1 female, Bajanchongor Aimak, SE bank Orog nur lake, 1200 m a.s.l., 23.6.1964 (MWM); 1 male, Bajanchongor Aimak, 5 km S of Somon Bogd, 1200 m a.s.l., 24.6.64 (MWM); 1 male, Suchebar Aimak, Ongon Elis, 10 km S of Somon Chongor, 900 m a.s.l., 3.8.65 (MWM). Non-type material: 2 males, Uburchangai Aimak, 130 km ESE of somon Bajanleg, 1,150 m a.s.l., 3.7.67 (MWM); 1 male, Khovd Aimak, 30 km N of Biger, 23–27.06.1999, leg. V. Kovtunovitch, P. Ustyuzhanin and R. Yakovlev (RYB); 4 males, 2 females, Bayankhongor, desert, 29 km of Khorult, 45°38' N, 100°38' E, 8–9.07.2000, leg. K. Špatenka (coll. W. Speidel, Bonn); 2 males, Bayankhongor, river Tuy Gol, 46°43' N, 100°55' E, 29.06.2000, 2,360 m a.s.l., leg. K. Špatenka (coll. W. Speidel, Bonn); 1 male, East-Gobi Aimak, 2 km SW of Mandakh, 1,300 m a.s.l., 5–7.2002., 44°24' N, 108°13' E (MWM); 1 male, Central Aimak, 20 km NW of Bayan Tsadmani, Tsagan-Davaa, 1,500 m, 48°17' N, 106°05' E; 18.07.1988, leg. Cs. Szaboky (MWM); 1 male, Omnogovi Aimak, Govi-Altai Mountains, Gurvan-Sayhan, Valley Yulin, 2,050 m a.s.l., 43°27' N, 104°03' E, 28.07.1988. leg. Cs. Szaboky (MWM); 1 male, East-Gobi Aimak, 7 km SW of Khatan-Bulak, 43°07' N, 109°03' E, 9.08.2002, leg. Lind (MWM); 1 male, southern Gobi Aimak, Bordzon-Gobi, 80 km SSE of Nomgon somon, 5.08.967, leg. Zaitzev (ZISP).

Genus *Barchaniella* Yakovlev, 2006

*Eversmannia* Supplement 1: 75. Type species: *Holocerus inspersus* Christoph, 1887.

17. **Barchaniella inspersa** (Christoph, 1887) (Figure 19)  
*Holocerus inspersus* Christoph, 1887b, Stett. Entomol. Ztschr. 48: 163.

Type locality: Ashkhabad [Turkmenistan, Ashkhabad].

Type material (lectotype) in ZISP.

General distribution: Kazakhstan, Uzbekistan, Turkmenia, southwestern China (Xinjiang), southwestern Mongolia (Khovd, Gobi-Altai, Bayan-Khongor, Uburkhangai, South-Gobi and East-Gobi Aimaks).

Material examined: 3 males, 6 females, Hovd Aimak, Dzhungarien Gobi, 45 km SW of Bulgan, Uvhod-Ula

Mountain, 1,350 m a.s.l., 8–10.07.2003., V. Doroshkin, P. Ustyuzhanin, D. German and R. Yakovlev (RYB); 5 males, 4 females, Govi Altai Aimak, Zakhui Gov', Khatan Khairhan Uul, 1,150 m a.s.l., 26.6.03, leg. S. Churkin (RYB); 1 male, Gobi-Altai Aimak, 5 km S of pass between Adzh-Bogd uul and Tschijn Schar nuruu Ranges, 1,600 m a.s.l., Exp. Dr. Kaszab, 29.06.1966 (MWM); 1 female, Gobi Altai Aimak, Zachuj Gobi, 10 km of Chatan chairhan Range, 1,150 m a.s.l., 27.6.66 (MWM); 2 males, Hovd Aimak, 60 km W of Bulgan, 1,120 m a.s.l., 20.06.1964, exp. Dr. Kaszab (MWM); 3 males, 10 km SSW of Bulgan, 1,200 m a.s.l., 5.07.1966 (MWM); 2 males, Bajanchongor Aimak, Talyn Bilgech bulag, between Tost ul and Cagan Bogd ul Ranges, 47 km E of Caganbulag, 1,200 m a.s.l., 23.6.67 (MWM); 2 males, South-Gobi Aimak, SW bank of Dund gol lake, 1,300 m a.s.l., 18.6.67 (MWM); 14 males, SW Mongolia, Gobi-Altai Aimak, Dzhungarian Gobi, Alag-Nuur lake, 16.07.2009, 1,300 m a.s.l., leg. R. Yakovlev and E. Guskova (RYB).

Genus *Eogystia* Schoorl, 1990

*Zool. Verhandelingen* 263: 71–72. Type species: *Hypopta sibirica* Alpheraky, 1895.

18. **Eogystia sibirica** (Alpheraky, 1895) (Figure 20)

*Hypopta sibirica* Alpheraky, 1895, *Dt. Entomol. Ztschr. Iris* 8: 185–186.

Type locality: Barabash [southeast Russia, Primorskii krai, Barabash-Levada]

Type material (lectotype) in ZISP.

General distribution: Russia (southern part of Chitinskaya and Amurskaya Oblast' [Dauria], Primorje), northern and central Mongolia (Central, Bulgan and Domod Aimaks), China (Jilin, Inner Mongolia, Hebei, Shandong).

In Mongolia, ssp. *Eogystia sibirica krushkei* Yakovlev, 2007.

Reported by Daniel from: Bulgan Aimak, 5 km W of Somon Daschintshilen, 1,140 m a.s.l., 2.7.64; 26 km E of Somon Lun, 1,180 m a.s.l., 3.7.64 (Daniel, 1965); Bulgan Aimak, 20 km W of Somon Bajannuur (220 km W of Ulan-Baator), 1,100 m a.s.l., 17.6.1966 [Daniel, 1969]; Central Aimak, 12 km S of Somon Bajanbaraat, 1,380 m a.s.l., 8.6.67; Central-Gobi Aimak, Choot bulag, between Somon Chuld and Somon Delgerchangaj, 38 km ENE of Delgerchangaj, 1,480 m a.s.l., 10.06.1967; Bajanchongor Aimak, Zinst ul Range, 50 km E of Somon Schine zinst, 2,000 m a.s.l., 30.06.1967 (Daniel, 1970); Bulgan Aimak, 11 km W of Somon Bajannuur, southern bank of Bajan nuur lake, 1,000 m a.s.l., 14.06.1968 (Daniel 1973).

19. **Eogystia kaszabi** (Daniel, 1965) (Figure 21)

*Isoceras kaszabi* Daniel, 1965, *Reichenbachia* 7 (10): 100–102.

Type locality: Mongolia, Bayan-Hongor Aimak, SE bank of Orog nur lake.

Type material (holotype by original designation) in MNHB.

General distribution: southern Mongolia (Bayan-Khongor Aimak), China (Shaanxi, Ningxia, Qinghai, Inner Mongolia).

Material examined: holotype (male) and paratype (male), Bayan-Hongor Aimak: SO bank of Orog nur lake, 1,200 m a.s.l., 23.6.64 (MNHB and MWM); paratypes (3 males), 8 km of Somon Zinst, 1,400 m a.s.l., 25.6.64 (3 paratypes in MWM). Non-type material: 4 males, Mongolia, Bajanchongor Aimak, 60 km S of Bajanchongor, 27-30.06.03, 1,640 m a.s.l., 45°40' N, 100°41' E, leg. A. Saldaitis (MWM).

Genus *Kerzhnerocossus* Yakovlev, 2011

*Neue Ent. Nachr.* 66: 37. Type species: *Kerzhnerocossus sambainu* Yakovlev, 2011.

20. ***Kerzhnerocossus sambainu* Yakovlev, 2011 (Figure 22)**

*Neue Ent. Nachr.* 66: 38.

Type locality: East Aimak, from Modon-Obo Mountain to Tamsag-Bulak.

Type material (holotype) in ZISP.

General distribution: Mongolia (East Aimak).

Material examined: holotype and 2 paratypes (all males), Mongolia, East Aimak, from Modon-Obo Mountain to

Tamsag-Bulak, 20.06.976, leg. Kerzhner (ZISP).

Genus *Dyspessa* Hübner, [1820]

*Verz. bekannter Schmett.*: 194. Type species: *Phalena pantherina* Hübner, 1790.

21. ***Dyspessa saldaitisi* Yakovlev, 2011 (Figure 23)**

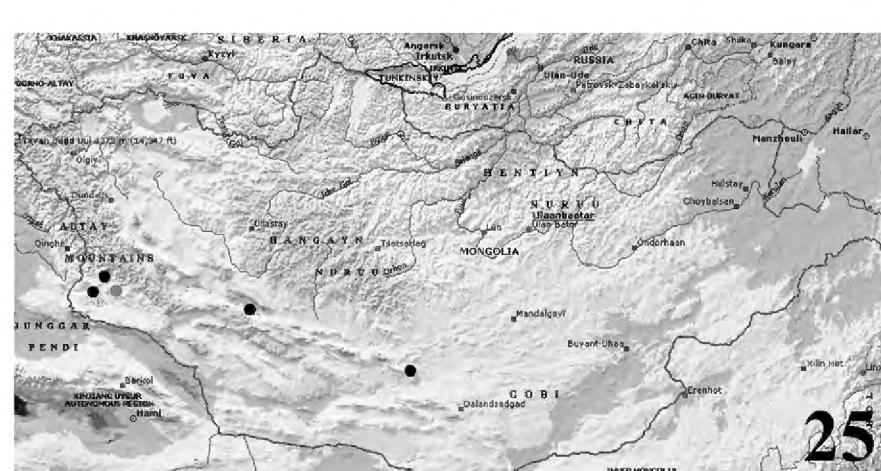
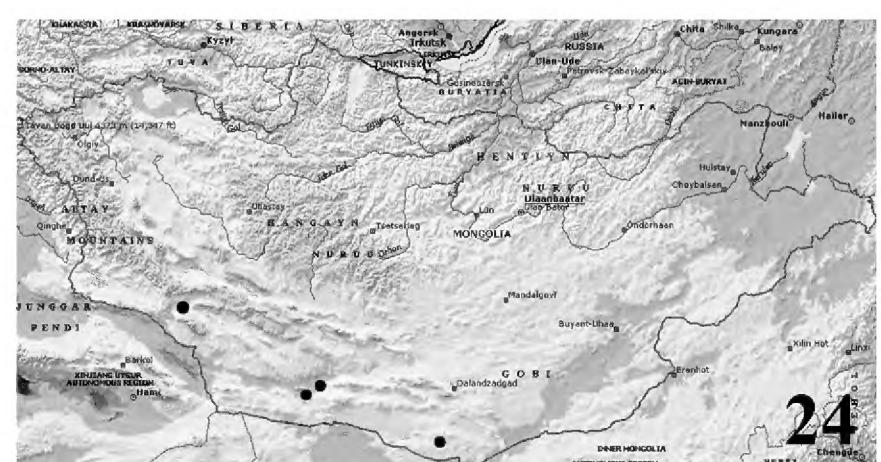
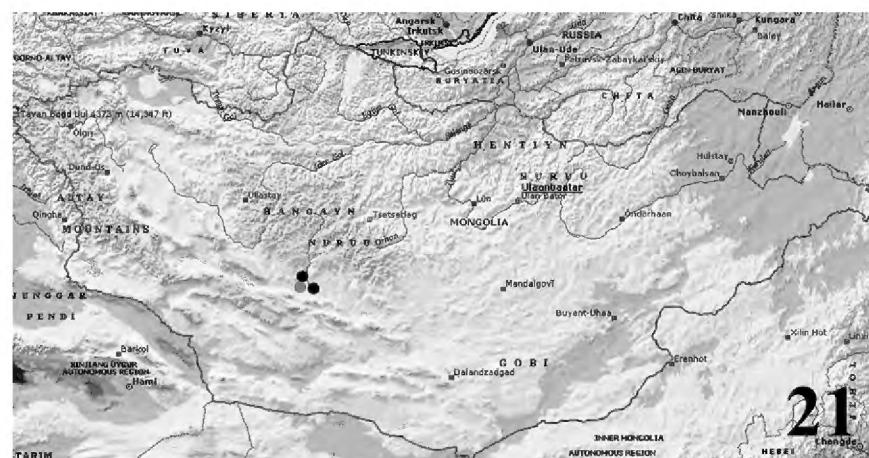
*Neue Ent. Nachr.* 66: 45.

Type locality: Mongolia, Gobi-Altai Aimak, south of Mongolian Altai, Mogoin-Gol River.

Type material (holotype) in MWM.

General distribution: Mongolia (Khovd and Gobi-Altai Aimaks).

Material examined: holotype and 3 paratypes (all males) Mongolia, Gobi-Altai Aimak, south of Mongolian Altai, Mogoin-Gol River, 1,920 m a.s.l., 15-18.06.2004, leg. Saldaitis (MWM); 1 paratype (male), 1 m, SW Mongolia, Gobi-Altai Aimak, Mongolian Altai Mountains (southern slope), Mogoi-Gol Valley, 6-8.07.2010, 1800 m a.s.l., 45°39' N, 093°47' E, leg. R. Yakovlev and E. Guskova (RYB). No type material: 3 males, southwestern Mongolia, Hovd Aimak, Bodonchijn-Gol basin, Valley Hundijn-Gol River valley, 1,600 m a.s.l., 46°06' N, 092°30' E; 28.05.2011, leg. R. Yakovlev (RYB);



**Figures 11-20.** Distribution of Cossidae in Mongolia. 21: *Eogystia kaszabi* (Daniel, 1965). 22: *Kerzhnerocossus sambainu* Yakovlev, 2011. 23: *Dyspessa saldaitisi* Yakovlev, 2011. 24: *Cecryphallus nubila* (Staudinger, 1895). 25: *Phragmataecia anikini* Yakovlev, 2011. Red marks = type locality.

4 males, W Mongolia, Hovd Aimak, near of Altan-Soembo, Uvchugijn-Serven Mountain, 1,700 m a.s.l., 45°39' N, 093°21' E; 29.05.2011, leg. R. Yakovlev (RYB); 1 male, Western Mongolia, Gobi-Altai Aimak, 15 km SEE of Altan-Soembo, Hundlengijn-Shil place, 1,650 m a.s.l., 45°37' N, 093°31' E, 30.05.2011, leg. R. Yakovlev (RYB); 2 males, SW Mongolia, Gobi-Altai Aimak, Dzhungarian Gobi desert, Alag-Nuur lake (near Ajlyn-Tsagan-Khuduk), 1,300 m a.s.l., 45°09' N, 094°30' E, 1–2.06.2011, leg. R. Yakovlev (RYB); 2 males, southwestern Mongolia, Hovd Aimak, 30 km S of Altai somon, Bodonchijn-Gol river valley (under stream), Elkhony-Ekhen-Tal place, 1,200 m a.s.l., 45°43' N, 092°05' E, 7.06.2011, leg. R. Yakovlev (RYB); 2 males, W Mongolia, Hovd Aimak, Bulgan-gol basin, Bayan-Gol river valley, Arshantyn-Nuruu Mountains, Ulyastajn-Sala river, 1,900 m a.s.l., 46°21' N; 091°08' E, 9–10.06.2011, leg. R. Yakovlev (RYB).

Subfamily Zeuzerinae Boisduval, [1828]

Genus *Cecryphalus* Schoorl, 1990

*Zool. Verhandelingen* 263: 156–157. Type species: *Zeuzera nubila* Staudinger, 1895.

22. ***Cecryphallus nubila*** (Staudinger, 1895) (Figure 24). *Zeuzera nubila* Staudinger, 1895, *Dtsch. Entomol. Ztschr. Iris* 8: 341.

Type locality: Kaschgar [northwestern China, Tura].

Type material (cotypes) in MHUB.

General distribution: Southern Kazakhstan, Kirgizya, southern Mongolia (Gobi-Altai, Bayan-Khongor and South-Gobi Aimaks), Uzbekistan, Tadzhikistan, Azerbaijan, southern Armenia, Turkmenistan, northern Iran, and Xinjiang, China.

Reported by Daniel from South-Gobi Aimak, 100 km W of Ovot Chuural, 22 km W of Sajryn chudag, 1,250 m a.s.l., 22.6.1967; Bajanchongor Aimak, Caganbulag, Cagan Bogd ul Range, 1,550 m a.s.l., 24.06.1967; Oasis Echin gol, 90 km NE of Caganbulag, 950 m a.s.l., 27–28.6.1967 (Daniel, 1970).

Material examined: 2 males, SW Mongolia, Gobi-Altai Aimak, Dzhungarian Gobi, Alag-Nuur lake, 9–10.07.2010, 1,300 m a.s.l., 45°09' N; 94°30' E; leg. R. Yakovlev, E. Guskova (RYB).

Genus *Phragmataecia* Newman, 1850

Newman, 1850, *Zoologist* 8: 2931. Type species: *Noctua arundinis* Hübner, [1808].

23. ***Phragmataecia anikini*** Yakovlev, 2011 (Figure 25).

*Neue Ent. Nachr.* 66: 53.

Type locality: Chovd Aimak, 3 km N von Somon Uench, im Tal des Flusses Uench gol.

Type material (holotype) in MWM.

General distribution: Southwestern Mongolia (Khovd and Gobi-Altai Aimaks).

Material examined: holotype (male) Mongolia, Chovd

Aimak, 3 km N of Somon Uench, valley of Uench gol, 1,450 m a.s.l., 7.7.1966; paratypes: 4 males, same data (MWM); 2 males, Mongolia, 10 km SSW of Somon Bulgan, 1,200 m a.s.l., 4.7.1966 (MWM); 2 males, Mongolia, Uburchangai Aimak, Oasis Chacar-usni chudag, 100 km ESE of Somon Bajanleg, 1,200 m a.s.l., 3.7.1967; 1 male, Mongolia, Hovd Aimak, 13 km S. of Altai Somon centre along the river Bodonch, 1,300 m a.s.l., 45°57' N, 092°50' E, 19.5.1990, leg. G. Fabian, M. Hreblay, I. Peregovits and G. Roncay (MWM); 3 males, Mongolia, Gobi-Altai Aimak, 10–30 km N of Biger, 22–23.06.1999, leg. V. Kovtunovich, P. Ustyuzhanin and R. Yakovlev (RYB); 5 males, Mongolia, Hovd Aimak, Barun-Khurai desert, 15 km S [of] Bulgan, 10.07.2007, leg. E. Gus'kova, V. Anikin and R. Yakovlev (RYB, ZISP).

## DISCUSSION

The fauna of Cossidae of Mongolia comprises 23 species (or very likely 25 species, if including species described from the adjacent region of southern Tuva—*Acossus viktor* (Yakovlev, 2004) and *Cossus shmakovi* Yakovlev, 2004). These belong to 12 genera (or 13, including *Acossus* Dyar, 1905). It is important to note that the cossid fauna of Mongolia is highly specific which is confirmed by the presence of 13 endemic species (*Catopta saldaitisi*, *Gobibatyr ustyzhanini*, *Chingizid gobiana*, *Ch. transaltaica*, *Ch. kosachevi*, *Cossus kerzhneri*, *Deserticossus beketi*, *D. churkini*, *D. mongoliana*, *Eogystia kaszabi*, *Kerzhnerocossus sambainu*, *Dyspessa saldaitisi* and *Phragmataecia anikini*) and two endemic genera (*Kerzhnerocossus* and *Chingizid*). All Mongolian endemics, except for *Catopta saldaitisi* Yakovlev, 2007, inhabit deserts and semideserts. The high percentage of endemics (more than 50% of the species and 10% of the genera), along with the overall depleted nature of the fauna, is evidence of its extremely ancient derivation from the Gobian fauna. The high endemism in Mongolia of the Cossidae is unique over all of the Palaearctic studied by me except in Yunnan, China. Available data suggests that the deserts of Mongolia are one of the centers of speciation of Cossidae in Eurasia.

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